

What is claimed is:

1 1. An micromechanical relay comprising:
2 a substrate;
3 a source contact mounted on said substrate;
4 a gate contact mounted on said substrate;
5 a pair of drain contacts mounted on said substrate; and
6 a deflectable beam;
7 said deflectable beam including,
8 a conductive beam body having a first end and a second end,
9 said first end of said conductive beam body being attached to said
10 source contact,
11 said conductive beam body extending substantially in parallel to said
12 substrate such that said second end of said conductive beam body extends
13 over said drain contacts,
14 a beam contact overhanging said drain contacts, and
15 an insulator positioned between said second end of said conductive
16 beam body and said beam contact to join said second end of said conductive
17 beam body to said beam contact and to electrically insulate said conductive
18 beam body from said beam contact.

1 2. The micromechanical relay as claimed in claim 1, wherein said
2 deflectable beam is deflectable to a first position, said first position being when said
3 beam contact is in electrical communication with said drain contact in response to
4 an electrical field of a first strength established between said gate electrode and said
5 conductive beam body;
6 said deflectable beam being deflectable to a second position, said second
7 position being when said beam contact is electrically isolated from said drain
8 contact in response to an electrical field of a second strength established between
9 said gate electrode and said conductive beam body.

1 3. The micromechanical relay as claimed in claim 1, wherein said substrate
2 comprises oxidized silicon or glass.

1 4. The micromechanical relay as claimed in claim 1, wherein said
2 deflectable beam body comprises nickel, gold, titanium, chromium, copper, or iron.

1 5. The micromechanical relay as claimed in claim 1, wherein said
2 insulator comprises polyimide or PMMA.

1 6. The micromechanical relay as claimed in claim 1, wherein said
2 insulator comprises silicon nitride, silicon oxide, or aluminum oxide.

1 7. The micromechanical relay as claimed in claim 1, wherein said drain
2 contact comprises platinum, palladium, titanium, tungsten, rhodium, ruthenium, or
3 gold.

1 8. The micromechanical relay as claimed in claim 1, wherein said gate
2 contact comprises platinum, palladium, titanium, tungsten, rhodium, ruthenium, or
3 gold.

1 9. The micromechanical relay as claimed in claim 1, wherein said source
2 contact comprises platinum, palladium, titanium, tungsten, rhodium, ruthenium, or
3 gold.

1 10. The micromechanical relay as claimed in claim 1, wherein said
2 micromechanical relay is incorporated into an electrical circuit.

1 11. A method for making a micromechanical relay, comprising:

2 (a) forming a source contact, a gate contact, and a pair of drain contacts
3 upon a substrate;

4 (b) forming a sacrificial region over the source contact, gate contact, drain
5 contacts, and substrate;

6 (c) forming a conductive beam contact region on the sacrificial region having
7 the drain contacts thereunder;
8 (d) forming an insulative region over the beam contact region; and
9 (e) forming a conductive beam body on the source contact, the conductive
10 beam body being formed further to extend laterally over the sacrificial region and
11 the insulative region, the formed conductive beam body extending laterally
12 substantially over the source contact, gate contact, and drain contacts.

1 12. The method as claimed in claim 11, wherein the substrate comprises
2 oxidized silicon or glass.

1 13. The method as claimed in claim 11, wherein the conductive beam body
2 comprises nickel, gold, titanium, chrome, chromium, copper, or iron.

1 14. The method as claimed in claim 11, wherein the insulative region
2 comprises polyimide or PMMA.

1 15. The method as claimed in claim 11, wherein the insulative region
2 comprises silicon nitride, silicon oxide, or aluminum oxide.

1 16. The method as claimed in claim 11, wherein the drain contact comprises
2 platinum, palladium, titanium, tungsten, rhodium, ruthenium, or gold.

1 17. The method as claimed in claim 11, wherein the gate contact comprises
2 platinum, palladium, titanium, tungsten, rhodium, ruthenium, or gold.

1 18. The method as claimed in claim 11, wherein the source contact
2 comprises platinum, palladium, titanium, tungsten, rhodium, ruthenium, or gold.

1 19. The method as claimed in claim 11, wherein the sacrificial region
2 comprises titanium, titanium-tungsten, or copper.